

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In The Application Of: Eldridge Et Al. Application No.: Unknown Filing Date: December 28, 2001 For: Electrical Contact Structures Formed By Configuring A Flexible Wire To have A Springable Shape And Overcoating The wire With At Least One Layer Of A Resilient Conductive Material, Methods Of Mounting The Contact Structures To Electronic Components, And Applications For Employing The Contact Structures	Examiner: Unknown Group Art Unit: Unknown
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PRELIMINARY AMENDMENT

Box New Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to examination of the above-identified patent application (which is filed herewith),
please amend the application as follows:

In The Title:

Please cancel the current title and replace it with the following new title:

Resilient Contact Structures Formed And Then Attached To A Substrate

In The Claims:

Please cancel claim 1 without prejudice.

Please add new claims 375 to 424 as follows:

375. (New) A method of forming a contact assembly comprising:
 fabricating a plurality of contact structures;
 providing a substrate comprising an array of electrical connections on a surface of said substrate; and
 attaching ones of said plurality of contact structures to ones of said array of electrical connections.

376. (New) The method of claim 375, comprising the further step of pooling said plurality of contact structures into one or more groupings prior to said attaching.

377. (New) The method of claim 376, comprising the further step of selecting one or more of said groupings of said plurality of contact structures prior to said attaching.

378. (New) The method of claim 377, wherein said attaching further comprises sequentially attaching said selected one or more of said groupings of said plurality of contact structures.

379. (New) The method of claim 377, wherein said attaching further comprises attaching en masse said selected one or more of said groupings of said plurality of contact structures.

380. (New) The method of claim 375, wherein said electrical connections comprise metallic pads.

381. (New) The method of claim 375, wherein said contact structures are resilient.

382. (New) The method of claim 375, wherein said fabricating comprises:
 forming said contact structures on a sacrificial substrate, and

removing said contact structures from said sacrificial substrate.

383. (New) The method of claim 382, wherein said forming comprises sequentially applying a plurality of materials to said sacrificial substrate.

384. (New) The method of claim 383, wherein at least one of said materials comprises a patterned layer of material.

385. (New) The method of claim 384, wherein said at least one of said materials comprises photoresist.

386. (New) The method of claim 383, wherein at least one of said materials composes said contact structures.

387. (New) The method of claim 386, wherein a plurality of said materials compose said contact structures.

388. (New) The method of claim 383, wherein at least one of said materials composes tips of said contact structures.

389. (New) The method of claim 388, wherein at least another of said materials compose wires bonded to said tips.

390. (New) The method of claim 389, wherein at least another of said materials composes an overcoat at least partially enveloping said wires.

391. (New) The method of claim 388, wherein said tips are patterned.

392. (New) The method of claim 375, wherein said fabricating comprises applying a patterned layer of material to a sacrificial substrate, said patterned layer comprising openings corresponding to said contact structures.

393. (New) The method of claim 392, wherein said fabricating further comprises creating a topographical pattern in said sacrificial substrate at said openings.

394. (New) The method of claim 392, wherein said fabricating further comprises forming contact tips of said contact structures in said openings.

395. (New) The method of claim 394, wherein said forming contact tips comprises depositing at least one material in said openings.

396. (New) The method of claim 394, wherein said fabricating further comprises wire bonding wires at one end to said tips, second ends of said wires being deposited away from said tips.

397. (New) The method of claim 396, wherein said fabricating further comprises over coating said wires.

398. (New) The method of claim 394, wherein said fabricating further comprises removing said sacrificial substrate.

399. (New) The method of claim 375, wherein said substrate composes a probe card assembly.

400. (New) The method of claim 375, wherein said attaching comprises:

bringing ends of said contact structures into contact with said array of electrical connections on said substrate; and

securing said ends of said contacts structures to said array.

401. (New) The method of claim 375, wherein said attaching comprises:

inserting ends of said contact structures into recesses in said substrate, said recesses corresponding to said array of electrical connections on said substrate; and

securing said ends of said contacts structures in said recesses.

402. (New) The method of claim 375, wherein said attaching comprises permanently attaching ones of said plurality of contact structures to ones of said array of electrical connections.

403. (New) The method of claim 375, wherein said attaching comprises metallurgically bonding ones of said plurality of contact structures to ones of said array of electrical connections.

404. (New) A method of forming a contact assembly comprising:

providing a substrate comprising an array of electrical connections on a surface of said substrate;

fabricating a plurality of elongate contact structures on a sacrificial substrate in a pattern that corresponds to at least a portion of said array of electrical connections;

attaching ones of said plurality of contact structures to ones of said array of electrical connections; and

removing said contact structures from said sacrificial substrate.

405. (New) The method of claim 404, wherein said contact structures are resilient.

406. (New) The method of claim 404, wherein said forming comprises sequentially applying a plurality of materials to said sacrificial substrate.

407. (New) The method of claim 406, wherein at least one of said materials comprises a patterned layer of material.

408. (New) The method of claim 407, wherein said at least one of said materials comprises photoresist.

409. (New) The method of claim 407, wherein at least one of said materials composes said contact structures.

410. (New) The method of claim 409, wherein a plurality of said materials compose said contact structures.

411. (New) The method of claim 406, wherein at least one of said materials composes tips of said contact structures.

412. (New) The method of claim 411, wherein at least another of said materials compose wires bonded to said tips.

413. (New) The method of claim 412, wherein at least another of said materials composes an overcoat at least partially enveloping said wires.

414. (New) The method of claim 411, wherein said tips are patterned.

415. (New) The method of claim 404, wherein said fabricating comprises applying a patterned layer of material to a sacrificial substrate, said patterned layer comprising openings corresponding to said contact structures.

416. (New) The method of claim 415, wherein said fabricating further comprises creating a topographical pattern in said sacrificial substrate at said openings.

417. (New) The method of claim 416, wherein said fabricating further comprises forming contact tips of said contact structures in said openings.

418. (New) The method of claim 417, wherein said forming contact tips comprises depositing a material in said openings.

419. (New) The method of claim 418, wherein said forming contact tips comprises depositing a plurality of materials in said openings.

420. (New) The method of claim 417, wherein said fabricating further comprises wire bonding wires at one end to said tips, second ends of said wires being deposited away from said tips.

421. (New) The method of claim 420, wherein said fabricating further comprises over coating said wires.

422. (New) The method of claim 404, wherein said substrate composes a probe card assembly.

423. (New) The method of claim 404, wherein said attaching comprises:

bringing ends of said contact structures into contact with said array of electrical connections on said substrate; and
securing said ends of said contacts structures to said array.

424. (New) The method of claim 404, wherein said attaching comprises:

inserting ends of said contact structures into recesses in said substrate, said recesses corresponding to said array of electrical connections on said substrate; and
securing said ends of said contacts structures in said recesses.

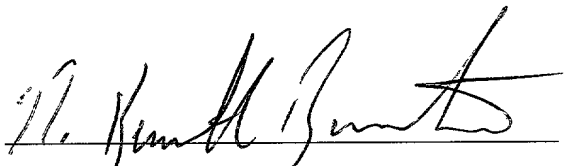
REMARKS

By this Preliminary Amendment, Applicants have cancelled claim 1 and added new claims 375-424. Applicants previously canceled claims 2-374. Consequently, claims 375-424 are now pending in the application. No new matter has been added, and the new claims are fully supported by the original disclosure. Applicants respectfully assert that the new claims are in condition for allowance and ask for an early notice of allowability.

Respectfully submitted,

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